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The Size, Structure and Economic Impact of the Converted Wood Products Industry of Newfoundland, 1987

by Jill E. Winsor

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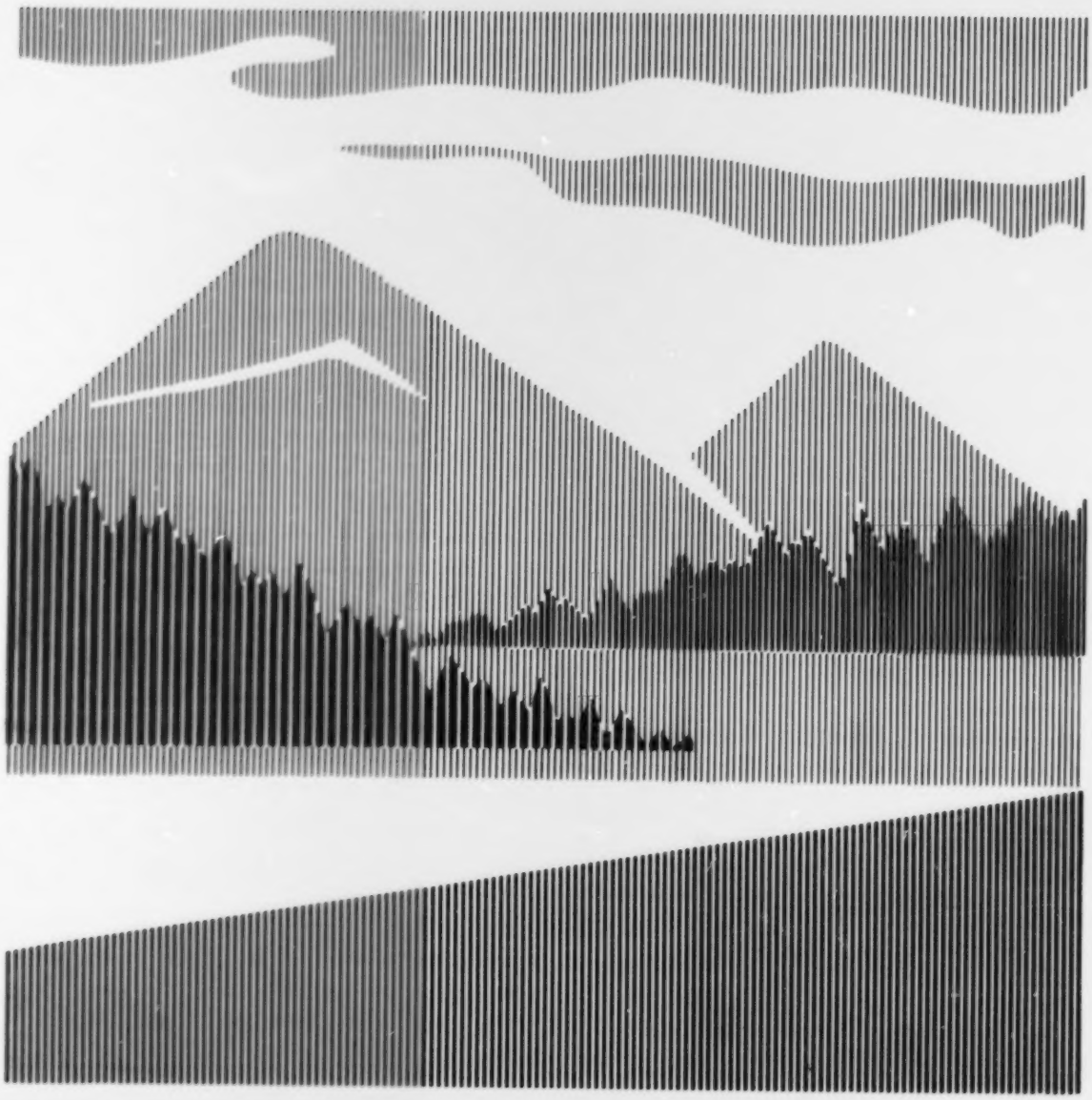

Forest Resource Development Agreement
Entente sur la mise en valeur de la ressource forestière

Canada — Newfoundland

THE SIZE, STRUCTURE AND ECONOMIC IMPACT OF THE CONVERTED WOOD PRODUCTS INDUSTRY OF NEWFOUNDLAND, 1987

by Jill E. Winsor

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Abstract

A census survey of the converted wood products (CWP) industry of Newfoundland was conducted during the summer of 1988. The survey objective was to collect data to permit an analysis of the current size, structure and economic impact of the industry. The results indicated that in 1987 the local CWP industry manufactured a wide variety of products valued at $ 20 065 704. Total fibre volume utilized was 22 237 m^3 of lumber, panel products and other wood input. The value added of the industry was an estimated $ 10 700 968. The industry provided 448 person-years of direct employment. Indirect economic benefits included $ 4 280 387 of additional income and 276 person-years of employment.

Résumé

Au cours de l'été de 1988, un recensement de l'industrie des produits dérivés du bois (PDB) a été effectué à Terre-Neuve. L'objectif était de recueillir des données afin d'analyser la taille, la structure et les incidences économiques de l'industrie. Les résultats ont révélé qu'on 1985, l'industrie locale des PDB avait manufacturé une vaste gamme de produits d'une valeur de 20 065 704 $. Le volume total de fibre utilisé s'est élevé à 22 237 m^3 de bois d'oeuvre, de panneaux et d'autres produits du bois. La valeur ajoutée de l'industrie a été estimée à 10 700 968 $. L'industrie a généré 440 années-personnes sous forme d'emplois directs. Les avantages économiques indirects ont englobé des revenus additionels de 4 280 387 $ et 276 années-personnes.

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The author wishes to thank the 55 owners of converted wood products firms in Newfoundland for their participation in the 1987 survey. Without their cooperation in providing confidential business information, this study could not have been conducted. Sincere thanks to Peter Trelawny and Grant Milne, Forestry Canada, for their guidance and advice during the census enumeration and writing of this publication. Thanks are also due to Brian Collins of the provincial Department of Development and Tourism for assistance in identifying firms prior to the actual survey. The technical and financial support of Messrs. Barry Garland and Albert King of the provincial Department of Forestry are gratefully acknowledged. The author also wishes to acknowledge the assistance of the following personnel from Forestry Canada; Dave Higdon for supplying computer services and Mrs. Mildred Grandy for editing the manuscript.

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by

Jill E. Winsor

1.0 INTRODUCTION

The economic importance of Newfoundland's converted wood products (CWP) industry has not been well documented in the past[1]. Only one study has been conducted on the industry to date (Milne and Mallay 1984) for the period 1981. Presumably, the information in this earlier study is outdated. Since 1981, the North American economy, including Newfoundland, has rebounded from the most severe economic downturn since the Depression of the 1930's to post an extended period of strong economic growth. The CWP industry of Newfoundland has likely been affected by this economic trend and numerous other factors since 1981.

Current information is required on the province's CWP industry for several reasons. First, federal agencies, such as the Atlantic Canada Opportunities Agency (ACOA), Forestry Canada, and Industry, Science and Technology (DIST), and provincial agencies, such as the Department of Development and Tourism, and the Department of Forestry and Agriculture, require a sound data base on the industry. These data are necessary to identify problem areas and facilitate the formulation of appropriate public policies and programs relating to industrial

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[1] The CWP industry includes firms which utilize primary forest products, such as lumber and panel products, as major components in the manufacturing of a wide range of end products. The major sub-sectors of the industry include manufacturers of kitchen cabinets, window and door frames, trusses, mobile homes, and pallets and boxes (Industry, Science and Technology 1988). In this study, manufacturers of wooden boats, furniture, general millwork, and other wooden products are included in the industry definition. For a detailed description of the CWP industry components, refer to Figure 2.1 on page 5.

development. Second, firms supplying primary wood inputs and equipment to the industry require timely information on the size of the CWP industry to help estimate the demand for their own goods and services.

The objective of this report is to describe and analyze the current size, structure and economic impact of Newfoundland's CWP industry. The major indicators used to assess the industry's impact include employment, income, value of shipments and value added.

The organization of this report is as follows. The methodology of the census survey used to collect information on the province's CWP industry is outlined in the second chapter. The third chapter presents an analysis of the CWP industry. Chapter four discusses the industry's problems and opportunities available. Finally, chapter five provides a summary and conclusions of the CWP industry.

2.0 METHODOLOGY

2.1 Survey Rationale

Statistics Canada annually enumerates the province's CWP industry through its Census of Manufacturers and publishes the results of this enumeration in Catalogue 25-202, **Canadian Forestry Statistics**. However, this published information is inadequate for several reasons. First, the information is not current. Up to three years may elapse before data for a particular reference year are published. Second, the information is not representative of the population. The Census of Manufacturers does not cover the numerous small CWP firms in the province. In 1986, Statistics Canada enumerated 17 CWP firms in the province; at least 61 other firms in the industry fell below the value of sales threshold for inclusion in the Statistics Canada survey. Third, the information includes only principal industrial statistics that do not fully

describe the CWP industry's entire contribution to the provincial economy.

2.2 Census Survey

A finite population, such as the CWP industry in Newfoundland, can be studied through either: (i) a census survey, involving a complete enumeration of the population or (ii) a sample survey, involving enumeration of only part of the population (Singh and Chaudhary 1986). Usually, a census is impractical because the cost of surveying an entire population is prohibitively expensive. Therefore, most enumerations are conducted using a sample survey. The results of a sample survey are used to draw inferences concerning the characteristics of the population. The population of firms comprising the CWP industry of Newfoundland was sufficiently small, relative to available budget, to permit a census. The primary objective of the census was to compile information describing the importance of the CWP industry to the Newfoundland economy. In addition, the census provided information for a directory[2].

2.3 Definition of the Census Population

The CWP population was defined using the Standard Industrial Classification System (SIC). This system is used to classify firms according to the commodities they produce. Statistical agencies worldwide, including Statistics Canada, employ the SIC method of classification. The universal system is convenient for grouping firms so that statistics from different countries can be

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[2] Winsor, J. E. 1989. A directory of the Newfoundland converted wood products industry, 1988. Canada/Newfoundland agreement, FRDA Report no. 004, St. John's, Nfld.

The directory was published in conjunction with this study and contains each firm's mailing address, phone number and product(s) manufactured.

compared.

The CWP industry falls within the manufacturing division and includes parts of 4 major industrial groups of the SIC system: Wood Industries (25), Furniture and Fixture Industries (26), Transportation Equipment Industry (32), and Other Manufacturing Industries (39)(Figure 2.1).

A list of 78 firms was compiled using telephone directories and two government publications: **Directory of Manufacturers** (Department of Development and Tourism 1988) and **A Directory of Woodworking Industries in Newfoundland, 1981** (Mallay and Milne 1983). Every effort was made to identify all CWP establishments in the province, however some small or remote firms could have been omitted.

2.4 Questionnaire Design and Survey Approach

The questionnaire used in the previous study of the industry (Milne and Mallay 1984) was updated and edited to suit the purposes of the 1987 study[3]. The questionnaire was tested during a trial interview in the St. John's area in cooperation with a representative of the province's Department of Development and Tourism. Based on this trial, the questionnaire was modified slightly.

Prior to conducting the provincial enumeration, the survey and questionnaire were approved by the federal government, in consultation with Statistics Canada. This approval process is required by any federal line department wishing to conduct a survey under the terms of the government's Information Collection Policy.

Upon receiving approval to perform the census, the firms of the CWP

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3 A copy of the questionnaire is available in either French or English at the request of the author.

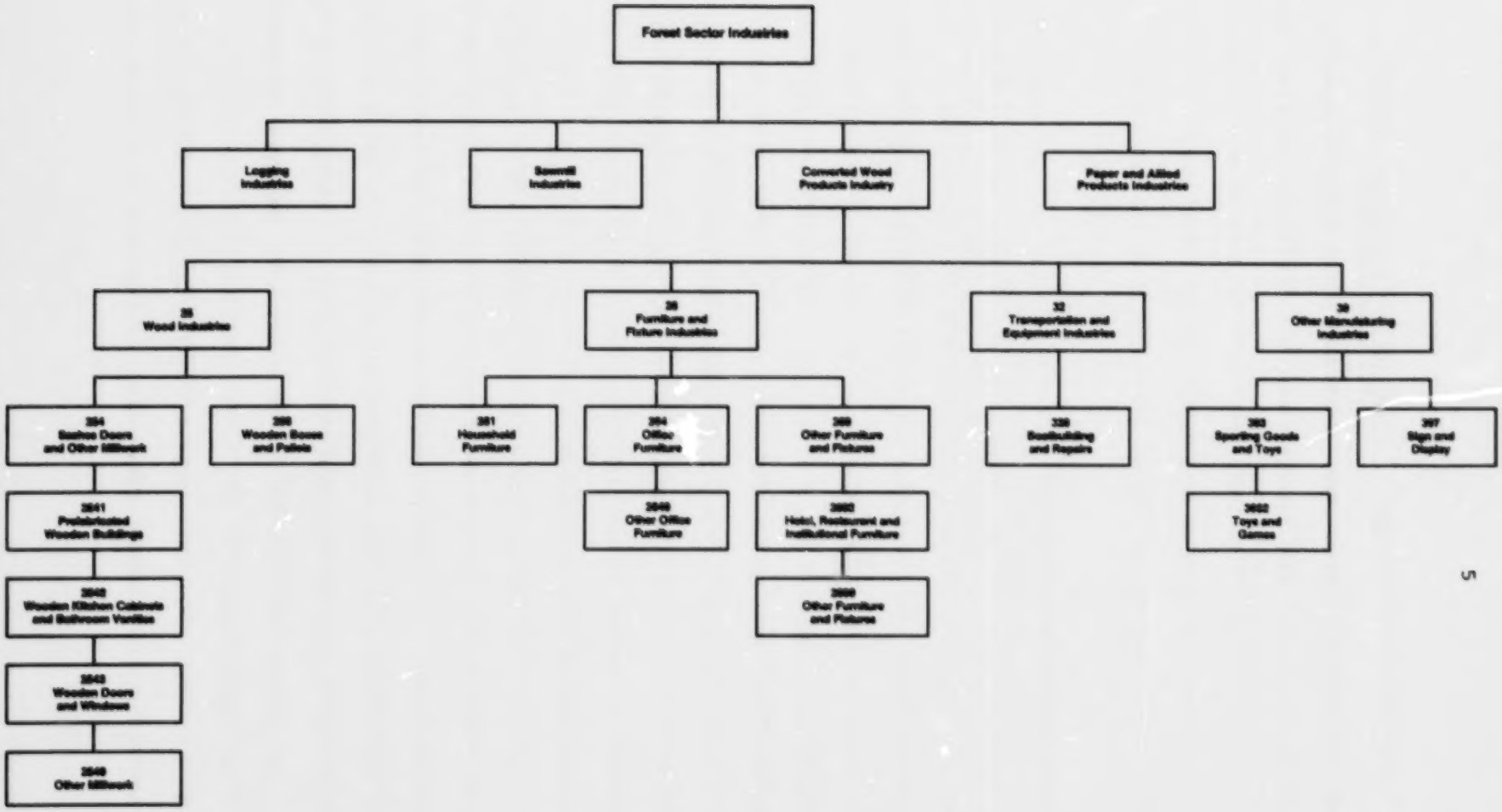

Figure 2.1 Standard industrial classification of the CWP industry of Newfoundland, 1987

industry were contacted through a cover letter during the summer of 1988 explaining the purpose of the survey. Firms were later contacted via telephone to arrange an interview. Some operators were not interviewed in person because of their location; consequently, these firms were surveyed by mail or telephone. Other establishments declined to participate in the census largely due to the sensitive nature of some of the information requested in the questionnaire.

2.5 Response Rate and Data Analysis

The response rate of the survey for all regions of the province was approximately 71 percent (Table 2.1). Firms from the Eastern region had the highest participation rate. Personal interviews proved to be a very effective method of reaching the total population of the CWP industry. Of the 55 establishments who responded to the census, 48 were contacted through personal interviews and 7 by mail-in questionnaires. Each of these 55 firms provided complete information required for a full economic analysis of the industry. An additional 5 firms provided incomplete information and were omitted from the census results. Sixteen firms, who were contacted either in person or by mail-in questionnaires, did not respond.

Each completed questionnaire was carefully examined to detect any recording inaccuracies. Respondents were contacted by telephone to correct any errors or to provide additional information required to complete unanswered questions. After each questionnaire had been thoroughly scrutinized, the survey information was entered into a database and analyzed using SAS, a statistical software package. The information provided by the respondents was kept confidential throughout the census process.

Table 2.1 Survey response rate of firms of the CWP industry of Newfoundland, 1987

Region	Sample Size	Responses	Response Rate
			- percent -
Eastern	46	38	83
Central	15	11	73
Western	17	6	35
Total	78	55	71

3.0 ANALYSIS OF THE CWP INDUSTRY

3.1 Industry Profile

3.1.1 Historical Background

To the early European fishermen and settlers of Newfoundland, the utilization of forest resources for ship building and other activities was a necessity of daily life. In 1612, the first sawmill was built in Cupids (Boyce 1986). Lumber from the mill was used by John Guy to build a ship for his voyage from St. John's to Trinity Bay. Local ship building activity was fairly modest for the next two hundred years, however, by the early 1800's, an expansion of Newfoundland's fishing industry prompted a significant increase in the local construction of fishing boats. Approximately 3700 ships were built in Newfoundland using local timber and labor in 800 communities across the Island between 1820 and 1889. Locally built ships accounted for three-quarters of all vessels registered in the province during this period.

In other activity, fishermen used dried bark from balsam fir to cover and protect codfish during the curing process (Smallwood 1984). Balsam fir and black spruce were also used to build homes, boats, wharves, storage sheds and

flakes.

This use of local timber marked the crude beginning of the CWP industry in Newfoundland. Over the years, the industry has evolved to meet the requirements of Newfoundland residents by providing traditional products such as wooden ships and fish flakes, and modern commodities such as custom-made furniture and kitchen cabinets.

3.1.2 Sub-groups and Sub-sectors of the CWP Industry

Using survey results, the 78 firms of the CWP industry in Newfoundland were grouped into four different sub-groups and 12 sub-sectors (Figure 3.1). The size of establishments ranged from small sole proprietorships producing lawn furniture to larger incorporated firms manufacturing kitchen cabinets and employing several people. Most firms of the CWP industry manufacture more than one product, therefore, to avoid categorizing a firm more than once among SIC groups, each firm was assigned a single SIC number based on the product(s) from which they received the most revenue.

3.1.3 Structure of the Industry

Market or industry structure refers to characteristics that influence the nature of competition within an industry (Bain 1965). Structure characteristics include the number and size distribution (e.g. concentration) of firms in an industry, the degree of buyer concentration (e.g. regional distribution), barriers and conditions of entry, and product differentiation.

3.1.3.1 Regional Distribution

Forty-seven percent of firms surveyed were located in eastern Newfoundland, primarily in the St. John's and Conception Bay areas. These firms accounted for

Figure 3.1 Sub-groups and sub-sectors of the Newfoundland CWP industry, 1987[4]

Sub-groups	SIC	Sub-sectors	Number of Firms
Residential Products and Interior Fixtures	2541	Prefabricated Wooden Buildings Industry	1
	2542	Kitchen Cabinet and Bathroom Vanity Industry	30
	2543	Wooden Door and Window Industry	8
	2549	Other Millwork Industries	13
Sub-total			52
Furniture and Fixtures	2611	Wooden Household Furniture Industry	11
	2649	Other Office Furniture Industries	1
	2692	Hotel, Restaurant and Institutional Furniture and Fixture Industry	2
	2699	Other Furniture and Fixture Industries	1
Sub-total			15
Other Wooden Products	2561	Wooden Box and Pallet Industry	4
	3281	Boatbuilding and Repair Industry	5
	3932	Toys and Games Industry	1
	3971	Sign and Display Industry	1
Sub-total			11
Total			78

[4] The directory (Winsor 1989) lists 84 firms in 14 sub-sectors. During 1988, six additional firms were identified over the original survey population of 78 included in the directory prior to publication. Since these six firms were not fully enumerated, they were not included in this report.

80 percent of the total value of shipments (Table 3.1). This fact is not surprising since approximately one-half of Newfoundland's total population resides in this region. Most firms in other regions of the province were located in or near large towns and cities to more effectively serve local markets (Figure 3.2).

Table 3.1 Regional distribution of firms of the CWP industry of Newfoundland, 1987

Region	Number of Firms	Percent of Total Firms	Percent of Value of Shipments
Eastern	37	47	80
Central	24	31	16
Western	17	22	3
Total	78	100	100[a]

[a] Total does not add to 100 due to rounding.

An analysis of each firm's SIC classification and region in Newfoundland shows the diversification of the CWP industry. The sub-group, residential products and interior fixtures, comprised 52 firms or 67 percent of the survey population (Table 3.2). Furniture and fixtures accounted for 15 firms or 19 percent of the survey population. Other wooden products accounted for the remaining 14 percent of the survey population. A more detailed breakdown of the industry structure by region and SIC classification is shown in Appendix A. This concentration of firms in residential and interior products is again explained by the fact that most firms in the CWP industry serve urban markets, principally St. John's.

Figure 3.2 Sub-groups and locations of firms of the CWP industry of Newfoundland, 1987

Table 3.2 The CWP industry of Newfoundland by region and SIC classification, 1987

Region	Residential Products and Interior Fixtures[a]	Furniture and Fixtures[b]	Other Wooden Products[c]	Total
Eastern	25	9	3	37
Central	14	4	6	24
Western	13	2	2	17
Total	52	15	11	78

[a] Residential products and interior fixtures include SIC sub-sectors 2541, 2542, 2543, and 2549.

[b] Furniture and Fixtures include SIC sub-sectors 2611, 2649, 2692, and 2699.

[c] Other Wooden Products include a miscellaneous group of firms who manufacture diversified products that are dissimilar to any major SIC group. These include SIC sub-sectors 2561, 3281, 3932, and 3971.

3.1.3.2 Concentration of Firms

Approximately 74 percent of total value of shipments was concentrated among 17 percent of the industry's firms. These large firms each manufactured products valued at more than $ 500 000 in 1987 (Table 3.3). Alternatively, the remaining 83 percent of the firms accounted for only 26 percent of the total value of shipments. The majority of the larger firms were incorporated and operated on a full-time basis. Even within these larger operations, the value of shipments was highly concentrated within a small number of firms. As an example, the four largest firms in the entire CWP industry accounted for 50 percent of total industry shipments. Three of these firms were from the residential products and interior fixtures sub-group, and one firm was from the furniture and fixture sub-group.

Table 3.3 Concentration of value of shipments of the CWP industry of Newfoundland, 1987

Value of Shipments	Number of Firms	Value of Shipments	Cumulative Firms	Cumulative Value of Shipments
- dollars -			- percent -	
1 - 25 000	11	1	14	1
25 001 - 100 000	24	5	45	6
100 001 - 500 000	30	20	83	26
500 001 or greater	13	74	100	100

3.1.4 Wood Consumption in 1987

In 1987, the CWP industry consumed approximately 22 237 m^3 (9 814 Mfbm) of wood valued at $ 8 592 358 (Table 3.4). Logs and lumber comprised 89 percent of the total volume of wood used by the industry. The remaining 11 percent consisted of panel products, such as plywood and particleboard. Since 1981, total wood consumption has declined by approximately 6 510 m^3 (19 percent) (Figure 3.3). This trend can be attributed to the smaller number of firms operating in 1987. One interesting aspect of wood consumption is that the relative share of panel products has increased from 3 percent of total wood volume in 1981 to 11 percent in 1987. This figure represents an increase of 53 percent over the six year period, and suggests that industry production has gradually shifted into a higher proportion of commodities requiring panels such as furniture and cabinets.

Softwood species accounted for approximately 73 percent of the total lumber used in production (Table 3.5). However, since the 1981 survey, the use of hardwoods has increased dramatically from 872 m^3 to 5 244 m^3. In terms of the relative share of fibre input, hardwood use increased from only three percent of

the total in 1981 to 27 percent in 1987. Conversely, the volume of softwoods has declined from 27 084 m^3 in 1981 to only 13 977 m^3 in 1987. This increase in the use of hardwoods again reflects the growth in the manufacturing of more sophisticated and higher value converted wood products in the province.

Table 3.4 Volume and value of wood used by the CWP industry of Newfoundland, 1987[5]

Wood Type	Mfbm	m^3	Percent of Total	Value ($)	Percent of Total
Lumber	8 136.87	19 219	86	4 429 691	52
Panel Products[a]	1 475.97	2 542	11	3 761 612	44
Logs, squares and other wood	201.38	476	3	401 055	5
Total	9 814.22	22 237	100	8 592 358	100[b]

[a] Volume estimated using a sheet thickness of 3/8".
[b] Total does not add to 100 due to rounding.

The CWP industry of Newfoundland relies heavily on imported lumber and panel products. In 1987, the industry imported 65 percent of its wood from other provinces and the United States. Most of the lumber imports were non-indigenous, hardwood species, such as oak, maple, bass and mahogany (Figure 3.4). The 1981 survey indicated that 77 percent of the industry's wood input was imported. Clearly, the industry has greatly expanded its use of local lumber. In particular, the use of local birch, for furniture and cabinets, has

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5 Methods of Measurement - The CWP industry in Newfoundland uses the imperial measurement of foot board measure (fbm) instead of the metric measurement of cubic metre (m^3) insisted upon by the federal government. Both measurements are used in this study. Conversion factors can be found in Appendix B.

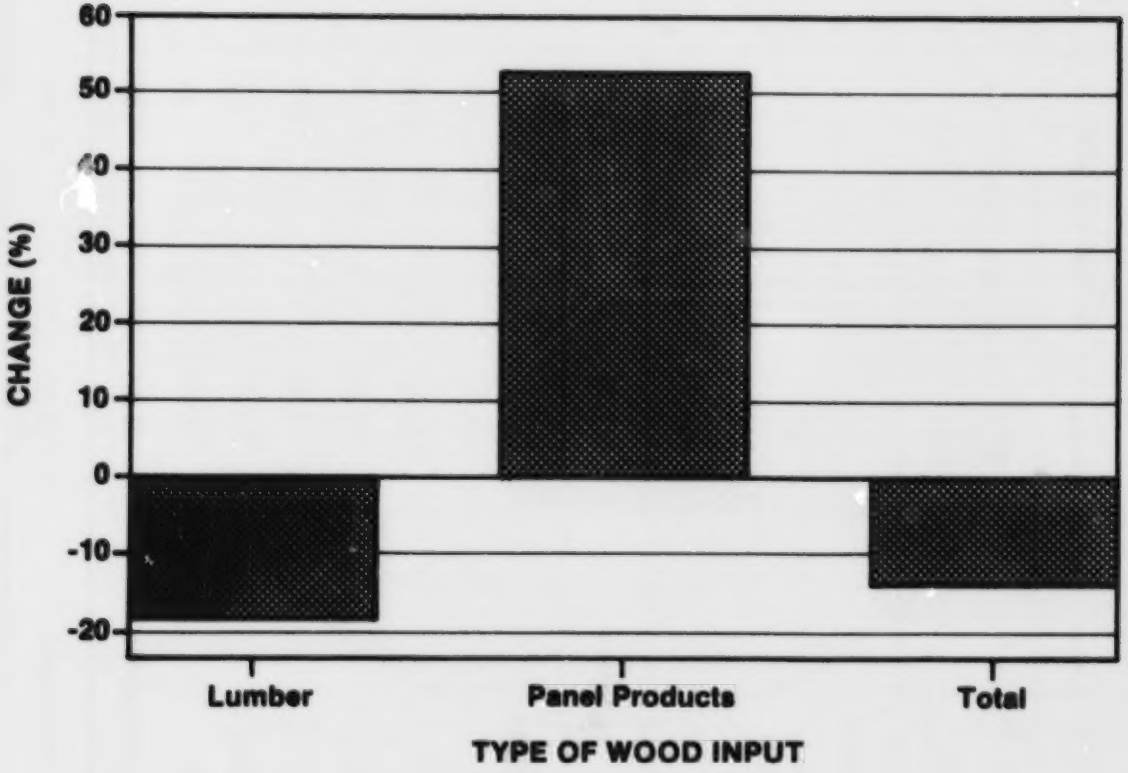

Figure 3.3 Percentage change in volume of wood input (M^3), 1981 and 1987

increased since small-scale kiln drying technology was introduced in the early 1980's. Conversely, all of the panel products used by the CWP industry in 1987 were imported because facilities no longer exist in Newfoundland to manufacture these materials.

Table 3.5 Lumber used by species in the CWP industry of Newfoundland, 1987

Species Type	Volume Used		Percent
	Mfbm	m^3	
a) **Softwoods**			
Spruce	3 145.88	7 431	38.7
Fir	1 712.17	4 044	21.0
Pine	1 059.21	2 502	13.0
Total Softwoods	5 917.26	13 977	72.7
b) **Hardwoods**			
Birch	1008.09	2 381	12.4
Oak	900.97	2 128	11.1
Maple	127.32	301	1.6
Bass	113.45	268	1.4
Mahogany	18.05	43	0.2
Walnut	15.08	36	0.2
Other Hardwoods	36.65	87	0.5
Total Hardwoods	2 219.61	5 244	27.4
Total Wood Volume	8 136.87	19 221	100.0[a]

[a] Total does not add to 100 due to rounding.

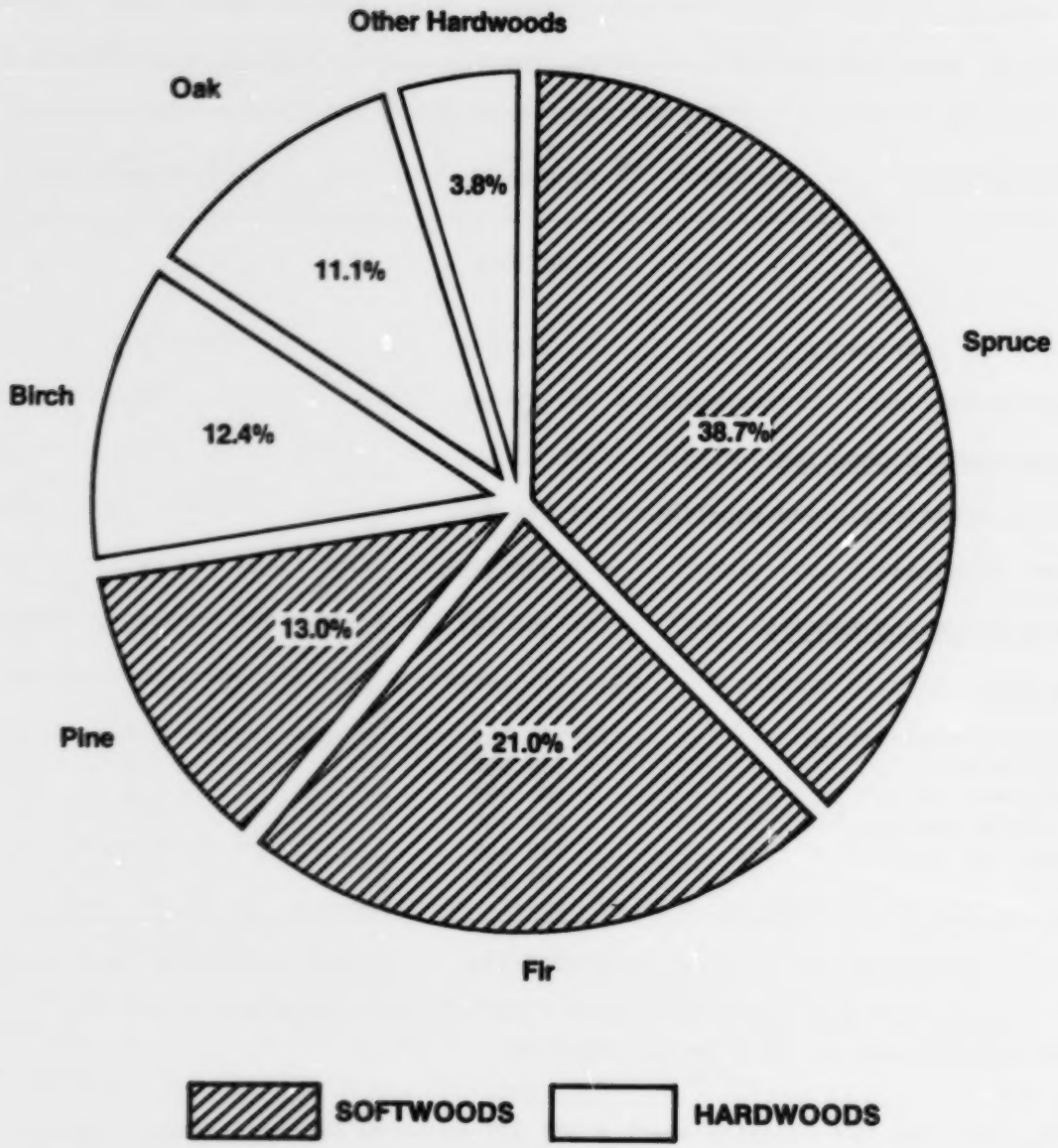

Figure 3.4 Percent of hardwood and softwood lumber used by the CWP industry of Newfoundland

3.2 Operating Expenditures

In 1987, the operating expenses of the CWP industry were $13 140 973 (Table 3.6). Materials and supplies, including outlays for wood, accounted for approximately 79 percent of the industry's operating expenditures. This result is similar to the 73 percent recorded in 1981.

Table 3.6 Operating expenditures of the CWP industry of Newfoundland, 1987

Expenditure Item	Total Expenditure	Percentage of Total Expenditure
	- dollars -	
A. Fuels and Power		
Fuels and lubricants	283 014	2.2
Electricity	383 384	2.9
B. Materials and Supplies		
Non-wood materials and supplies	1 813 768	13.8
Wood materials	8 592 358	65.4
C. Maintenance and Repairs	364 751	2.8
D. Services		
Hired transportation	387 837	2.9
Insurance	319 894	2.4
Equipment rental	100 285	0.8
Interest charges	668 195	5.1
Legal and accounting fees	165 495	1.3
Other	61 992	0.5
Total	13 140 973	100.0[a]

[a] Total does not add to 100.0 due to rounding.

In 1987, the CWP industry spent $ 387 837 on hired transportation. Survey results show that only 33 percent of firms in the industry utilize such

services. Thus, the majority of manufactured products are sold within close proximity of the plant. This statement is supported by 1981 survey results indicating that 69% of domestic sales occurred within 50 km of the plant. The structure and location characteristics of the industry (i.e. high proportion of firms near urban centres) also suggest that most firms simply use their own transportation to carry products to distributors. In addition, many firms sell their products directly to the consumer from the plant. Furniture, cabinet, and window manufacturers are good examples of companies that practice direct marketing.

3.3 Earned Income

In 1987, 54 firms (69%) in the CWP industry earned less than $ 20 000 (Table 3.7). These firms were mainly small single-owner operations with few employees. Surprisingly, owners of 77 percent of these firms indicated that woodworking was their sole source of income. Twenty-four firms (31%) in the industry earned more than $ 20 000 in 1987. These firms were mostly larger, incorporated companies that operated full-time. A breakdown of earned income by region and sub-group can be found in Appendix C.

3.4 Value of Shipments

The value of shipments or sales is another measure of the economic importance of an industry[5]. In 1987, the value of shipments for the CWP industry was an estimated $ 20 065 704. Only seven firms exported their

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6 Value of Shipments - the value of a finished product at the plant gate excluding transportation costs and excise taxes.

Table 3.7 Earned income after operating expenses of firms of the CWP industry of Newfoundland, 1987

Earned Income	Number of Firms	Percent of Firms
- dollars -		
Less than 10 000	31	40
10 000 to 19 999	23	29
20 000 to 59 999	14	18
Greater than 60 000	10	13
Total	78	100

production outside of the province. Exports of the local CWP industry amounted to 0.1 percent of total production. In the 1981 survey, value of shipments were an estimated $33 359 000 with exports accounting for approximately 2 percent of total sales. The decline in value of shipments reflects structural changes in the industry and is discussed in more detail in Section 3.10 of this report.

In 1987, most firms of the CWP industry were small and not vertically integrated with primary producers. The sub-groups of residential products and interior fixtures accounted for 61 percent of total industry sales (Figure 3.5). Furniture and fixtures had 26 percent of sales and the remaining 13 percent of total sales came from other wooden products.

The value of shipments per person year of employment in 1987 was $ 44 790. The 13 largest firms accounted for 74 percent of total sales in the CWP industry (Table 3.8). This skewed distribution in value of shipments reinforces the perception that although the industry structure is comprised mainly of small firms, economic activity is dominated by a few large firms.

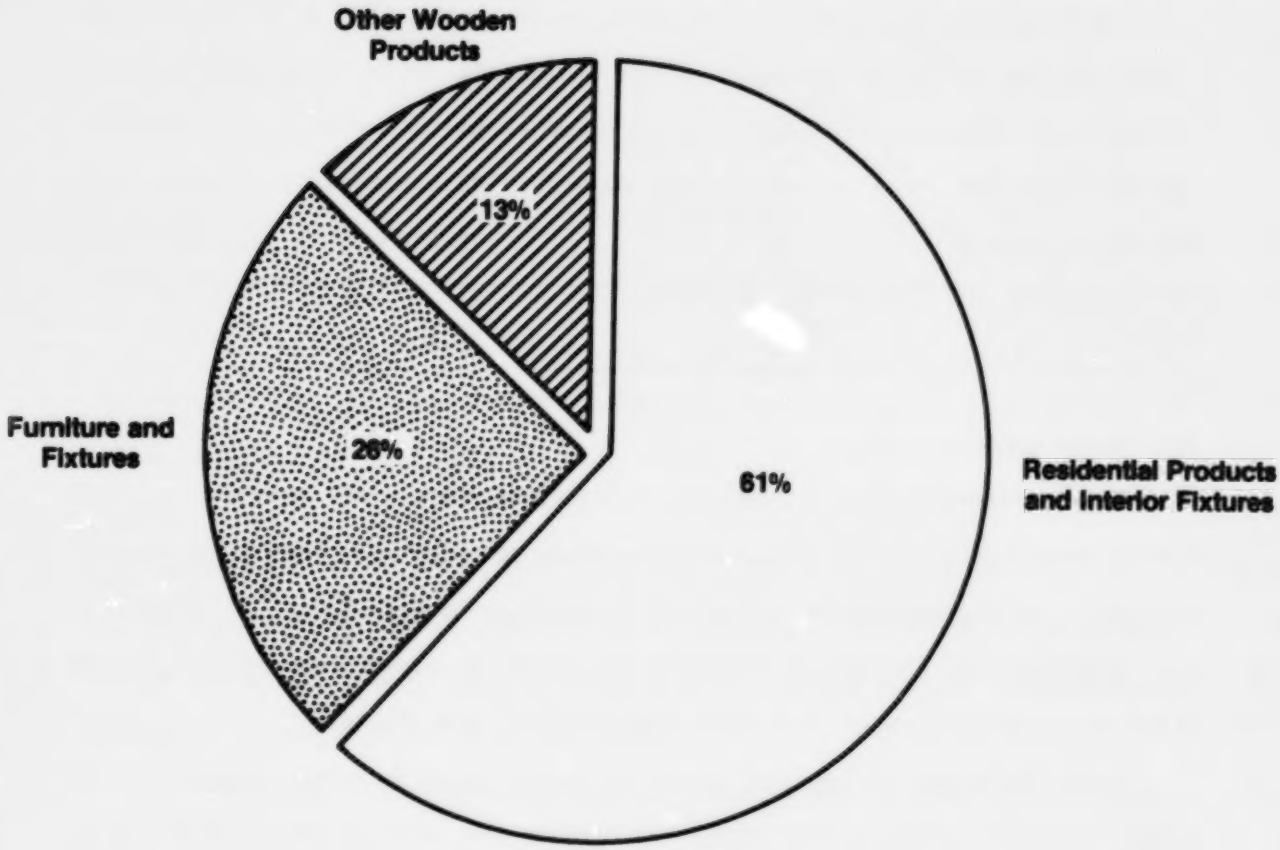

Figure 3.5 Percent distribution of the value of shipments by sub-groups of the CWP industry of Newfoundland, 1987

Table 3.8 Distribution of value of shipments of the CWP industry of Newfoundland, 1987

Value of Shipments	Number of Firms	Percent of Firms	Percent of Total Shipments
- dollars -			
1 - 25 000	11	14	1
25 001 - 100 000	24	31	5
100 001 - 500 000	30	38	20
500 001 or greater	13	17	74
Total	78	100	100

3.5 Value Added

Gross Domestic Product (GDP) is a principle measure of economic activity within geographic limits, usually by country or province, regardless of the ownership of the factors of production (Statistics Canada 1980). An industry's net contribution to GDP is referred to as value added, represented by the returns to the factors of production; land, labor, and capital.

Value added can be measured either at factor costs or market prices. Value added at **factor costs** is the difference between the value of gross output of an industry and the costs of intermediate inputs such as materials and services, and net indirect taxes[7]. Value added at **market prices** is equivalent to value added at factor costs plus net indirect taxes. Value added at market prices normally exceeds value added at factor costs because net indirect taxes are usually positive. Generally, value added of an industry is measured at factor

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[7] Net indirect taxes are indirect taxes less subsidies.

costs. This method is more exact because indirect taxes, which are not a return to the factors of production, are excluded.

Value added at factor costs can be derived either directly or indirectly. The direct approach is to sum the returns to the factors of production (wages, salaries, net operating surplus and depreciation). The indirect approach is to deduct the value of intermediate inputs from the value of gross output. Although the indirect method is usually a more reliable measure of value added, the value of gross output in this study was only an estimate. Thus, the direct method is used in this report.

In 1987, value added for the CWP industry was $ 10 700 968. Although this contribution to the provincial economy was not as significant as other industries, such as the fishery, spin-offs resulted in indirect effects on income and, in turn, employment.

3.6 Employment

Employment is a useful indicator of an industry's importance to an economy. In this study, employment includes working owners and partners of unincorporated businesses and is measured in person years[8].

In 1987, direct employment in the CWP industry was 448 person-years (Table 3.9). The work force of the industry was comprised of 796 full-time employees, part-time employees, working owners, and unpaid family members of working owners. Since 1981, the share of full-time salaried employees out of total employment has dropped from 74 percent to 69 percent. Accordingly, the share of

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8 Person-year is a period worked by an individual if he or she was employed full time for an entire year. Alternatively, a person-year could be two persons working six months each or four persons working three months each.

part-time paid employees has increased from 8 percent to 19 percent. The average number of days worked by plant owners or partners in 1987 was 261, similar to an average of 237 days worked in 1981.

Table 3.9 Number of workers of the CWP industry of Newfoundland, 1987

Components	Number of Workers	Person Years
Full-time salaried workers	370	311
Part-time salaried workers	351	86
Working owners and partners and unpaid family workers	75	51
Total workers and person years	796	448

3.6.1 Salaries and Wages

Another useful indicator of an industry's economic importance is the income earned by employees, proprietors, partners and corporations (Table 3.10). In 1987, gross earnings of employees, working owners and partners of Newfoundland's CWP industry totaled $ 8 635 173. In 1981, gross earnings were an estimated $ 9 442 000. The drop in income over the past six years is due mainly to the decline in industry size and value of shipments.

A regional breakdown indicates that the employees, working owners and partners located in eastern Newfoundland received 69 percent of total earnings of the CWP industry (Table 3.11). In contrast, central and western Newfoundland accounted for 26 and 5 percent, respectively, of the total earnings of workers in the province's CWP industry. This trend reflects the concentration of firms on the Avalon Peninsula in eastern Newfoundland.

Table 3.10 Earnings of the CWP industry of Newfoundland, 1987

Components	Earnings	Total Earnings
	- dollars -	- percent -
Wage and salary workers	6 507 900	75
Proprietors, partners and corporations	2 127 273	25
Total CWP Earnings	8 635 173	100

Table 3.11 Earnings by region of the CWP industry of Newfoundland, 1987

Region	Working Owners/Partners Earnings[a]	Employee Earnings	Total Earnings	Percent of Province
	- dollars -			
Eastern	694 909	4 547 559	5 242 468	69
Central	226 909	1 716 387	1 943 296	26
Western	113 455	243 954	357 409	5
All Regions	1 035 273	6 507 900	7 543 173	100

[a] The earnings of working owners/partners does not include incorporated firms.

The average earned income per person-year of employment in the CWP industry was $ 16 900 in 1987 (Table 3.12). In comparison, the average earned income across all sectors was $ 17 582 in Newfoundland and $ 23 265 in Canada during 1986, the most recent period for which national information was available from Statistics Canada (Catalogue 93-114). The 1981 survey indicated that the average income per person year in the CWP industry was slightly higher than the

Newfoundland average as well as other manufacturing industries, with the exception of Chemical, Logging, and Pulp and Paper Industries.

Table 3.12 Earnings per person year of the CWP industry of Newfoundland, 1987

Components	Earnings per Person Year
	- dollars -
Wage and salary workers	16 440
Working owners and partners and unpaid family workers	20 521
Average CWP Earnings for All Workers	16 900

Employee earnings per person year were almost identical throughout the province (Table 3.13). However, some differences emerged when the earnings of working owners and partners were compared regionally. In particular, the earnings for working owners and partners in the eastern region were 55 and 36 percent higher than in the central and western regions respectively. This substantial disparity in income is again due to the influence of the large and lucrative St. John's market in comparison with smaller markets in central and western Newfoundland.

3.7 Fixed Capital

In this study, capital is defined as the stock of goods used in the production of other goods. Fixed capital consists of durable goods, such as buildings, equipment (saws, planers, etc.) and vehicles used in the production process. In 1987, the replacement value of fixed capital in the Newfoundland CWP industry was $ 19 295 073. Approximately 36 percent of the CWP firms did

Table 3.13 Earnings per person year by region of the CWP industry of Newfoundland, 1987

Region	Working Owners/Partners Earnings[a]	Employee Earnings	Average for All Workers
	- dollars per person-year -		
Eastern	23 798	16 440	17 112
Central	15 384	16 441	16 294
Western	17 455	16 440	16 742
Average for All Regions	20 491	16 440	16 900

[a] Working owners/partners include unpaid family workers.

not plan to purchase any major equipment during the next 5 years, however the remaining 64 percent of firms anticipated investing approximately $ 3 551 836 in new equipment. In contrast, the 1981 survey indicated that 77 percent of the CWP firms would not be making capital investments over the next five year period. This significant change in spending plans may indicate that in 1981 the stock of fixed capital was fairly new; by 1987, owners were faced with replacing old equipment. Therefore, the replacement cycle for some equipment may be in the order of six or seven years. Also, owners may feel that market conditions in the early 1990's will be more conducive to capital investment than existed in 1981.

The substantial capital investment planned for the next five years will benefit local suppliers, however given the weak manufacturing base in the province, much of the equipment will originate from outside the region. Therefore, a high percentage of this future investment income will likely leak out of the provincial economy after the initial local expenditure.

3.8 Public Revenue

Establishments are taxed according to their type of ownership. The 1987 survey revealed four main types of ownership in the CWP industry (Table 3.14). Both sole proprietorships and partnerships are taxed the same rate because owners and their businesses are single entities. Corporations, on the other hand, are issued the right to operate as a separate legal entity from their owners (i.e. shareholders). Government owned or operated firms, and non-profit organizations are not required to pay taxes. In this report, estimates are provided for three main taxes paid by the CWP industry; income tax, sales tax, and municipal tax.

Table 3.14 Firm ownership of the CWP industry of Newfoundland, 1987

Type of Ownership	Number of Firms	Percentage of Total
Sole proprietorship[a]	31	41
Partnership[b]	14	18
Corporation[c]	31	38
Other[d]	2	3
Total	78	100

[a] Sole proprietorship - an unincorporated business that is owned by one person.
[b] Partnership - an unincorporated business that is owned by two or more persons known as partners.
[c] Corporation - a business that is incorporated under the laws of a particular province or the Government of Canada; the owners are known as shareholders.
[d] Other - government owned or operated and non-profit organizations.

3.8.1 Personal Income Tax

Provincial personal income taxes are collected by the federal government on behalf of the province. The tax rate, established by the province, is expressed

as a percentage of the basic federal personal income tax payable (Milne 1981). In 1987, average federal and provincial tax rates for working owners and employees were 5.23 and 3.14 percent, respectively. In addition, the federal income tax included a surtax of 3 percent.

Personal income tax of the CWP industry was derived by calculating gross income per employee using census data on wages and salaries. Gross income for the owners of sole proprietorships and partnerships was calculated from earned incomes after operating expenses. This method utilized income tax forms to estimate average deductions for the industry and demographic data from Statistics Canada on age, sex, and marital status.

In 1987, the estimated personal income taxes paid by the CWP industry was $ 646 164 (Table 3.15), and the average taxable income for individuals, including owners, partners and employees was $ 17 101. Estimates were made using the following methods of deduction (Milne 1981)[9];

1) Marriage deduction: Statistics Canada (Catalogue 93-101, 1986) did not have statistics available for the 1987 census year. The 1986 data indicated that 6 percent of all males between the ages of 25 and 59 years of age were single. Therefore, 94 percent of CWP industry employees were assumed to be married and claiming the marriage deduction for the 1987 tax year.

2) Child deduction: Statistics Canada (Catalogue 94-101, 1986) indicated that in 1986, there were an average of 1.70 children per family in Newfoundland. Approximately 81.1 percent of these children were 18 years of age or less and 18.9 percent were 18 years or older. Therefore, the average employee or owner

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9 Estimations for personal taxes were based on statistics from the 1986 census year.

of CWP establishments is assumed to have a family 1.38 children 18 years of age or less, and 0.32 children over the age of 18.

3) **Other deductions:** The maximum deductions for Canada Pension Plans, Unemployment Insurance Premiums and Basic Personal Exemptions were claimed for the 1987 tax year.

Table 3.15 Personal income taxes paid by the CWP industry of Newfoundland, 1987

Type of Tax	Proprietorship[a]	Partnership[b]	Employees[c]	Total Taxes
		- dollars -		
Federal	26 021	34 117	336 240	396 378
Surtax	781	1 024	10 087	11 892
Provincial	15 606	20 465	201 823	237 894
Total Personal Taxes	42 408	55 606	336 150	646 164

a Sole proprietorship - included 22 firms (i.e. individuals/owners).
b Partnership - included 10 firms and assumed 2 partners per firm.
c Employees - includes all employees in the CWP industry.

3.8.2 Corporate Income Tax

Provincial corporate income taxes are collected by the federal government on behalf of the provinces. These taxes are expressed as a percentage of taxable corporate income. In 1987, 31 firms paid an estimated $ 690 872 in corporate taxes (Table 3.16). Each firm paid an average of $ 22 286 in corporate income taxes during 1987.

Corporations of the CWP industry fall under one of two tax categories; manufacturing businesses or small manufacturing businesses. The distinction between the categories and resulting tax rates is determined by the amount of

active business income (i.e. gross sales) reported by each corporation. Firms with active business income greater than $ 200 000, are classified as a **manufacturing business** and subject to a federal corporate tax rate of 30 percent and a provincial corporate tax rate of 16 percent on taxable income. However, firms with active business income of less than $ 200 000, are classified as a **small manufacturing business** and subject to a federal corporate tax rate of 9 percent and a provincial corporate tax rate of 10 percent on taxable income. Both small and large manufacturing businesses paid a surtax of 3 percent on federal corporate tax in 1987. Of the 31 incorporated firms in the CWP industry, 8 were manufacturing businesses and 23 were small manufacturing businesses.

Table 3.16 Corporate income taxes paid by the CWP industry of Newfoundland, 1987

Type of Tax	Tax Rates		Amount Paid
	Small Manufacturing	Large Manufacturing	
	- percent -		- dollars -
Federal	9	30	465 246
Surtax	3	3	13 957
Provincial	10	16	211 669
Total Corporate Taxes			$ 690 872

3.8.3 Other Tax

3.8.3.1 Federal Sales Tax[10]

Federal sales tax is imposed on goods manufactured in Canada, or imported into Canada (Revenue Canada 1987). The tax is paid by firms whose sales of taxable goods exceed $ 50 000 in one year. The tax payable is calculated by dividing gross sales by a percentage based on the products manufactured or imported. In the CWP industry during 1987, the tax rate was 8 percent of the manufacturer's selling price. During the year, 53 percent of the firms in the CWP industry paid a total of $ 1 176 240 in federal sales tax.

3.8.3.2 Retail Sales Tax

The retail sales tax of Newfoundland and Labrador is 12 percent of the purchase price of most tangible goods sold within the province. Retailers act as agents of the Crown by collecting and forwarding the tax to the Province (Milne 1981). In 1987, the CWP industry paid $ 2 407 885 in provincial retail sales tax. Each CWP firm contributed $ 30 870 of revenue to the province on average.

3.8.3.3 Municipal Tax

In 1987, the CWP industry paid $ 204 334 in municipal taxes. Thus, on average, each firm paid $ 2 620 in municipal taxes.

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10 On January 1, 1991, the federal government proposes to implement a national tax on goods and services (GST). The proposed GST will eliminate the 12 percent FST imposed on manufactured products and replace it with a seven percent tax on most goods and services. The implications of the proposed GST on the CWP industry are difficult to measure in its present form. Critics of the new tax expect it to have a devastating effect on the small business sector, in particular, bookkeeping and accounting for tax credits.

3.8.4 Total Tax Revenues

The total estimated tax revenues received by federal, provincial, and municipal governments from the Newfoundland CWP industry in 1987 were approximately $ 5.1 million (Table 3.17). Clearly, the largest tax component is the Provincial retail sales tax which accounted for nearly one-half of all public revenues paid by the CWP in 1987. The 12 percent tax rate (the highest in Canada) is the primary reason why retail sales tax revenues are so large. The reader should be reminded that while taxes are a revenue to the Crown, they simply represent a transfer of income from the private sector and individuals, to the public sector. Taxes are used by the various governments to purchase public goods and for general redistribution through transfer payments. Thus, taxes in themselves should not be viewed as an economic benefit. The rationale for deriving estimates of taxes paid by any particular industry is to provide information to allow a comparison of inter and intra-industry tax burdens.

Table 3.17 Total public revenue paid by the CWP industry of Newfoundland, 1987

Type of Tax	Amount Paid	Percentage of Total
	- dollars -	
Personal tax	646 164	12.6
Corporate tax	690 872	13.5
Federal sales tax	1 176 240	22.9
Retail sales tax	2 407 885	46.9
Municipal tax	204 334	3.9
Total Public Revenue	5 125 495	100.0a

[a] Total does not add to 100 due to rounding.

3.9 Economic Effects of CWP Activity

For some economic criteria, direct, indirect, and induced components can be calculated (Jacques 1988). The most commonly used criteria are employment and income. Direct employment is the total number of employees in the CWP industry, while direct income refers to wages and salaries paid to these individuals. As an alternative, value added can represent income, and includes wages and salaries plus earned income of the firms.

At the provincial level, the expenditure of CWP employee income on goods and services, plus company expenditures on capital and operational items, provide a major economic stimulus. After allowing for income leakages through taxes, savings and expenditures outside the province, the circulation of remaining income throughout the province will generate additional income and employment in other sectors of the economy. Therefore, direct effects will indirectly expand the provincial economy. Induced effects arise from the spending of labor employed in those sectors of the economy which provide intermediate inputs to the CWP industry. The consumer goods purchased by these individuals will generate additional economic activity.

Indirect effects can be estimated by applying multipliers to direct employment and income. This study did not attempt to calculate employment and income multipliers for Newfoundland; this task would have been a comprehensive study in itself. Multipliers have been estimated for all provinces using an input-output model and 1979 Statistics Canada data (Jacques 1988). The multipliers are;

a) Employment multiplier - 1.70
b) Income multiplier - 1.62

These multipliers are based on activity of all forest industry sectors in

the province rather than specifically for the CWP industry. Given that the majority of forestry activity in Newfoundland is accounted for by the pulp and paper sector, these multipliers likely overestimate the indirect and induced economic effects of the CWP industry. Despite this fault, the multipliers are the best published estimates available. These multipliers are lower than in most other provinces and reflect the narrow base of the Newfoundland economy. The leakage of income through a high propensity to import consumer and industrial goods reduces the level of secondary benefits from industrial activity.

3.9.1 Direct, Indirect, and Induced Effects of CWP Activity

The employment multiplier of 1.70 means that the 448 person-years of direct employment in the CWP sector generate 314 indirect jobs in other sectors of the provincial economy (Table 3.18). For income effects, value added is used as the measure of direct income. Applying the income multiplier of 1.62 to the CWP value added of $ 10 700 968 results in indirect and induced income of $6 634 600. The total effects are 762 person-years of employment and $ 17 355 567 of income (Table 3.19).

Table 3.18 Estimated number of jobs dependent on CWP activity, 1987

Activity	Direct Employment	Indirect and Induced Employment	Total Employment
		- person years -	
Employment	448	314	762

3.10 Comparison with 1981 Census

The decline in the economic indicators can be explained largely by a "shake-up" that occurred in the CWP industry between the 1981 and 1987 census

periods (Table 3.20). During this time, a recession forced many businesses in Newfoundland to cease manufacturing converted wood products or transform their operations to other products. Smaller, and less successful firms that were reluctant to modify their operations lost their businesses. As a result, the number of firms in the CWP industry declined from 92 to 78.

Table 3.19 Estimated income from CWP activity, 1987

Activity	Direct Income	Direct and Induced Income	Total Income
		- dollars -	
Value Added	10 700 967	6 634 600	17 335 567

Table 3.20 Economic indicators of the CWP industry of Newfoundland, 1981 and 1987

Economic indicator	CWP Industry 1981[a]	CWP Industry 1987
Number of Firms	92	78
Value added ('000 $)	12 725	10 701
Value of shipments ('000 $)	33 768	20 066
Employment (person-years)	521	448
Total earned income and wages & salaries ('000 $)	9 442	8 662

[a] Source: Milne and Mallay, 1984.

Structural changes, negative economic impacts, methodology, and access to computers and statistical packages each contributed to the variance in the results of the 1981 and 1987 studies and, consequently, had a great influence on value added and value of shipments.

In 1987, value added was $ 10 700 968, approximately $ 2 million less than the value estimated for 1981 (Appendix D). The actual amount for value added in the 1981 study was $ 20 753 571, computed at market prices by applying the indirect method (i.e. Gross Sales - Intermediate Inputs). Since the market prices method usually exceeds the factor cost method, the latter method was selected for consistency. Value added from 1981 was revised, utilizing the factor cost method, to conduct a comparative analysis of the industry over six years.

Between 1981 and 1987, value of shipments declined by approximately $ 13.7 million from $ 33 767 784 to $ 20 065 704 (Figure 3.6). In recent years, the CWP industry has seen a change in products manufactured. For example, the number of wooden boatbuilders has declined dramatically from 11 to 5 between survey periods. These firms have either ceased to manufacture wooden boats or have converted their operations to manufacturing fibreglass or steel-frame boats. These firms accounted for approximately $ 5 million in value of shipments for the industry in 1981. Conversely, the number of firms manufacturing products in the kitchen cabinet and bathroom sub-sector increased in 1987 by 30 percent as a result of the demand for new homes and the recent trend of renovating older homes.

The CWP industry utilized 28 747 m^3 and 22 237 m^3 of wood input in 1981 and 1987 respectively (Table 3.21). This decline in total wood consumption can be attributed to the decrease in the number of firms over six years. The employment per m^3 remained constant, suggesting that the industry did not invest

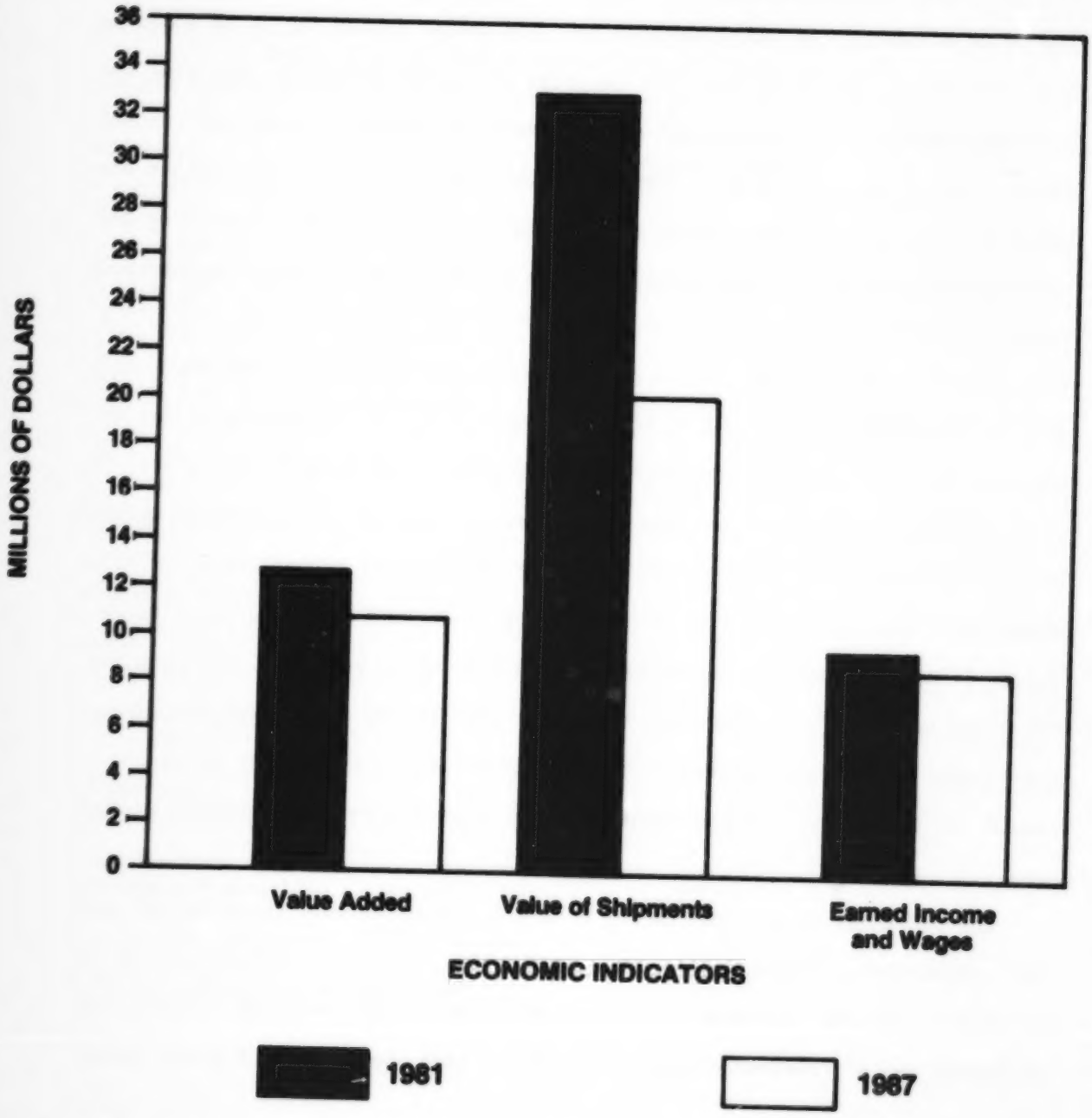

Figure 3.6 Economic indicators of the CWP industry of Newfoundland, 1981 and 1987

heavily in labor-saving capital equipment. Value added and total income per m^3 increased slightly as a result of inflation. In real terms, these unit values have probably not changed appreciably. Thus, the changing industry structure has not resulted in real increased value added or income per m^3 of wood input. The major decline in the value of shipments per m^3 is due to a number of factors including changing industry structure and a possible overestimation of the value of shipments in the earlier study.

Table 3.21 Wood input units per m^3 of the CWP industry, 1981 and 1987

Economic indicator	CWP Industry 1981[a]	CWP Industry 1987
	- dollars -	
Value added	0.44	0.48
Value of shipments	1.17	0.90
Employment (person years)	0.02	0.02
Total earned income and wages & salaries	0.33	0.39

[a] Source: Milne and Mallay, 1984.

3.11 Inter-Industry Comparisons

Using results from the census survey, the CWP industry of Newfoundland can be compared to other forest industries in the province, namely, pulp and paper, logging, and sawmill and planing mill.

Economic indicators for sawmills and planing mills, and the CWP industry are derived from Forestry Canada's survey statistics, whereas data for pulp and paper and logging industries are derived from Statistics Canada and the provincial Cabinet Secretariat and Executive Council 1988 (Table 3.22).

In terms of employment, the CWP industry is the smallest of the four forest industries (Figure 3.7). The pulp and paper industry dominates the entire forest industry in Newfoundland.

Table 3.22 Comparison of CWP industry with other forest industries of of Newfoundland, 1987[a]

Economic indicator	Forest Industries			
	CWP	Logging[b]	Sawmills and Planing Mills[c]	Pulp and Paper[d]
Value added ('000 $)	10 701	42 724	14 877	165 000
Value of shipments ('000 $)	20 066	97 881	26 809	375 400
Employment (person-years)	448	1 067	762	2 400
Net operating surplus[e] ('000 $)	4 167	14 547	6 333	n.a.

[a] The reference period of the CWP and sawmill and planing mill industries is 1987. The reference periods of the pulp and paper and logging industries are 1985 and 1986, respectively.

[b] Source: Trelawny, P. 1990. An analysis of the sawmill and planing mill industry of Newfoundland.

[c] Source: Statistics Canada, Catalogue 25-201: data for 1985.

[d] Source: Cabinet Secretariat and Executive Council, 1988: data for 1986.

[e] Net operating surplus equals value added less wages.

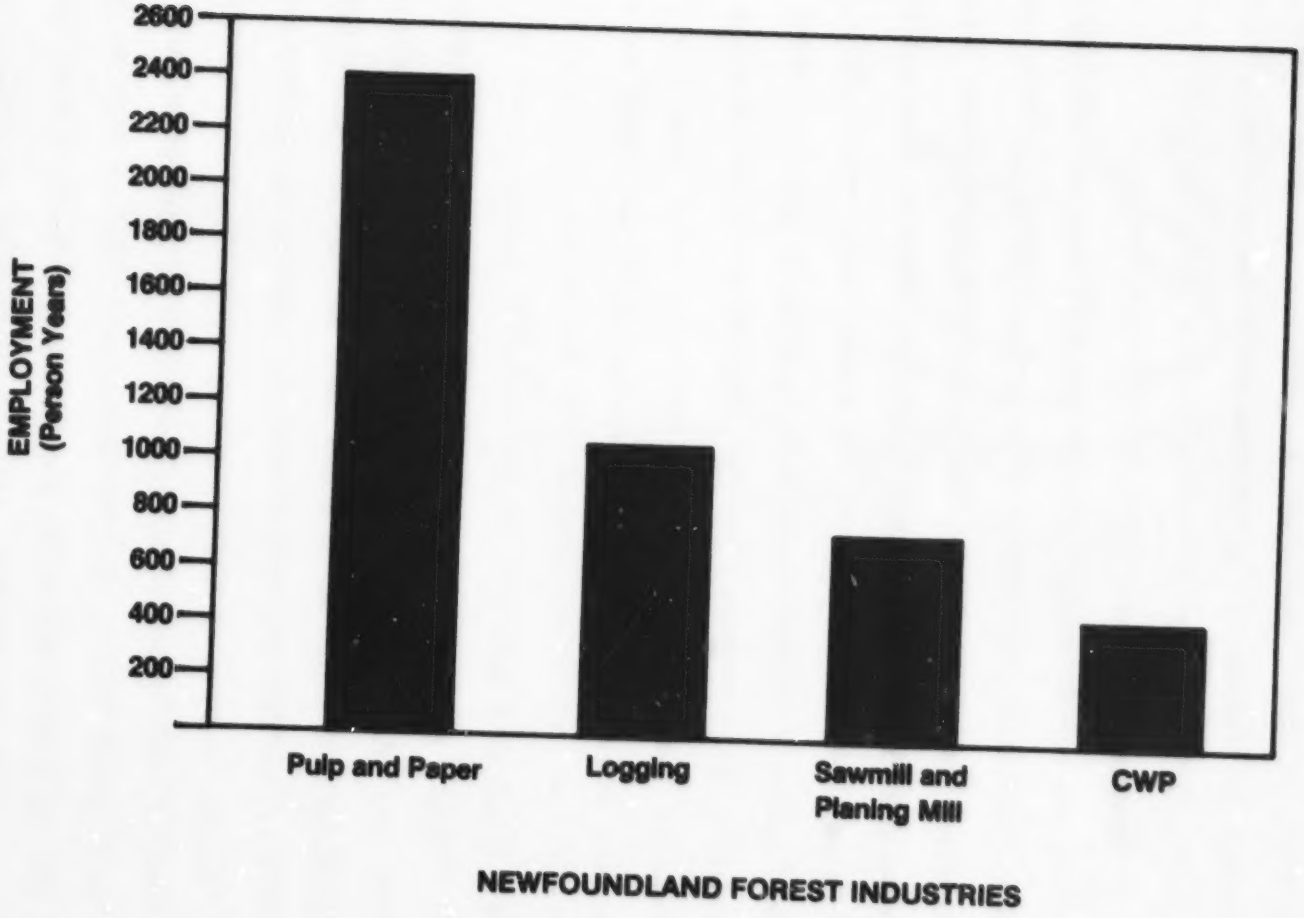

Figure 3.7 Employment of Newfoundland forest industries

4.0 PROBLEMS AND OPPORTUNITIES

In addition to data obtained during the census process, several issues concerning the growth and development of the local CWP industry were raised by operators of CWP firms across the province. This information was used to identify the problems facing CWP firms and to recommend probable solutions.

4.1 Technology Transfer

In the current study of the CWP industry, problems with technology transfer were identified that also existed in the 1981 study. The CWP industry is comprised of several dozen small, and independent firms. The need for a provincial industry association is evident to assist the transfer of technology from other regions of Canada and the United States. For example, information on new equipment, sawing, gluing and finishing is lacking in Newfoundland at the industry level. Since the CWP industry is very diversified, a provincial industry association would not be beneficial to all firms; however, information on such issues could be obtained from national associations.

4.2 Local Wood Quality

From the survey of CWP firms, local wood accounts for only 35 percent of the mill furnish used by most sub-sectors in manufacturing converted wood products. The high market prices paid for imported lumber and panel products reflect the fact that very little local wood can satisfy the demands of the CWP industry in terms of moisture content, species and wood type (Milne and Mallay 1984). For example, panel products are imported because they are not manufactured locally, and hardwood species such as oak and maple, are also imported because they do not grow naturally in Newfoundland. This constraint on local supply also exists with large dimensions of softwood lumber sizes or

species, such as white pine and Douglas fir.

The potential for import substitution does exist for products that are grown in the province such as, smaller dimension softwood lumber and birch. However, the quality of local lumber was a common complaint among the operators of CWP firms. Problems included inconsistent widths and high moisture content. Thus, the quality of local lumber must be improved in order to meet the demands of the CWP industry. While the sawmill industry has made great improvements in the area of lumber quality since 1981, further advances are required.

Problems with the quality of local wood could be reduced by continuing earlier efforts to develop small-scale kiln drying technologies. With additional funding, individual sawmills and distributors of Newfoundland lumber could install small-scale kiln dryers to improve local wood quality. Improvements in wood quality may also be facilitated by wider use of grading standards and new technology in the sawmill and planing mill industry.

4.3 Management and Accounting Skills

While some firms illustrated efficient bookkeeping methods, many of the smaller firms had weak management and accounting skills. This problem was also identified in the 1981 survey. Several firms did not have accurate figures on total costs and revenues and were unable to quantify the amount of wood used (e.g. inventory) and products manufactured. Thus, information required on per unit costs and revenues is not available to make important management decisions, such as pricing, discounting, and improving profitability.

Management and accounting skills could be improved in several ways. The installation of computers would be a great asset to improving records on inventory and finances of CWP firms, at least in the larger firms. In 1987, only a few larger firms used computer technologies. Seminars are often offered

through Memorial University of Newfoundland and several community colleges in the province that focus on management and accounting skills for small businesses in Newfoundland.

4.4 Canada / US Free Trade Agreement

Effective January 1, 1989, the United States and Canada signed a Free Trade Agreement (FTA) that will gradually lift most trading tariffs between the two countries. National associations are skeptical about the effects that the FTA will have on various industries in Canada. For example, the Canadian Kitchen Cabinet Association (CKCA) lobbied for a ten year phase-out period that would allow time for Canadian manufacturers to acquire the necessary equipment and adjust to the significant market changes that are expected when the 15 percent tariff is removed from American products. However, this attempt was unsuccessful as the CKCA and associated firms were placed in the same category as furniture manufacturers who were allotted a five year phase-out period. On the other hand, the Canadian Window and Door Manufacturers' Association (CWDMA) feel optimistic about the new opportunities that will evolve from the FTA. The CWDMA are hoping that higher quality Canadian-made products will make a smooth transition to catch a niche of the larger American market.

CWP firms in mainland Canada are already feeling the effects of increased competition from U.S. firms who enjoy lower labor costs and better economies of scale. The full effect of the FTA on the CWP industry of Newfoundland is unknown. Increased competition from American-based companies could possibly threaten some local firms, however U.S. firms could be discouraged by the small size and remoteness of the Newfoundland market.

4.5 Government Involvement

Provincial and federal government involvement in Newfoundland's CWP industry was increased with the establishment of the Atlantic Canada Opportunities Agency (ACOA). In the past few years, ACOA has provided approximately $ 2.2 million in funding that enabled several firms to expand their businesses and purchase capital equipment. This expansion creates new opportunities for CWP firms through higher quality products and a more competitive position against nationally established firms both in Canada and the United States. Continued government involvement in small Newfoundland industries such as the CWP industry, may be necessary through programs and policies relating to education, training, technology transfer and funding.

5.0 SUMMARY AND CONCLUSIONS

Table 5.1 summarizes the major economic impacts created by the CWP industry of Newfoundland in 1987.

Table 5.1 Summary of economic impacts of the CWP industry of Newfoundland, 1987

Economic Variable	Impact
a) Direct employment	448 person-years
b) Indirect employment	237 person-years
c) Direct income (Value added)	$ 10 700 968
d) Indirect income	$ 4 280 387
e) Replacement value of fixed capital	$ 19 295 073
f) Operational expenditures	$ 13 140 973
g) Value of shipments	$ 20 065 704
h) Public revenue	$ 5 125 495

This report provided a detailed analysis of the Newfoundland CWP industry Newfoundland. Statistics were presented for 1987 based on a census survey performed during the summer of 1988. Of the seventy-eight CWP firms identified as operating during 1987, 55 participated in the census survey.

The CWP industry of Newfoundland was divided into three regions: Eastern, Central, and Western. The CWP industry was concentrated in Eastern Newfoundland with 47 percent of all firms and 80 percent of total industry sales. An additional division segmented the CWP industry into three industry groups based upon SIC code. The largest industry group, residential products and interior fixtures, comprised 67 percent of the CWP industry and accounted for 61 percent of sales. The two other groups, furniture and fixtures and other wooden products, comprised 19 and 14 percent of the CWP industry, respectively, and accounted for the remaining 39 percent of total sales.

In 1987, the CWP industry consumed approximately 22 237 m^3 of wood valued at $ 8 592 358. Lumber accounted for 86 percent of total wood used, panel products for 11 percent, and logs, squares and other wood for the remaining 3 percent. Approximately, 73 percent of the wood used were softwood species while hardwood species comprised the remaining 27 percent. Since the 1981 census, the amount of hardwood species used in production increased by 24 percent.

Overall, an estimated 448 person-years of employment, including working owners and partners of CWP firms, was generated in 1987. The total value of incomes for salaried workers, owners, partners and corporations was $ 8 635 173. The CWP industry had operating expenditures of $ 13 140 973 and replacement value of fixed capital of approximately $ 19 295 073.

The CWP industry contributed $ 10 700 968 in value added to the provincial economy. The industry's value of shipments totaled $ 20 065 704. Public revenues paid by CWP firms in 1987 were $ 5 125 495.

Indirect employment was 237 person-years and indirect income was $ 4 280 387. These indirect economic benefits arise from direct employment, income and expenditures by the industry. Sectors of the provincial economy that are most strongly affected by these indirect effects are the sawmill and planing mill industry and service industries such as equipment repair firms, commercial lending institutions, and firms that distribute building materials and supplies.

Six years elapsed since the last study was performed on the local CWP industry. During this period, the economic recession of 1982-83 caused many firms to cease manufacturing converted wood products. This "shake-up" resulted in a decline in the number of firms from 92 to 78 and, in turn, caused economic indicators to decrease.

Compared to other forestry sectors in the province (sawmill and planing mill, logging, and pulp and paper), the CWP industry is the smallest of the four industries. Although not as large as other forest industries, the CWP industry does make a sizable contribution to goods-producing sector of the provincial economy.

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APPENDICIES

APPENDIX A

Table A-1 Total population by region and SIC

Region	Residential Products and Interior Fixtures				Furniture and Fixtures				Other Wooden Products				Total
	2541	2542	2543	2549	2611	2649	2692	2699	2561	3281	3932	3971	
Eastern		13	3	9	7	1	1		1	1	1	1	38
Central	1	9	3	1	3			1	2	3			23
Western		8	2	3	1		1		1	1			17
Total	1	30	8	13	11	1	2	1	4	5	1	1	78

APPENDIX B

Table B-1 List of conversion factors used in the study on the CWP industry of Newfoundland, 1987

2.407 m^3 (cubic metres)	=	1 cord (85 cubic feet solid wood)
2.362 m^3 lumber	=	1000 board feet (Mfbm) lumber
1 m^3	=	3.626 cords (4'* 4'* 8')
1 m^3	=	423.37 fbm (approx.)[a]
1 m^3 * 0.42337	=	1000 fbm (Mfbm)
0.0288 m^3	=	1 sheet 4'* 8' panel (3/8" basis)
12.0 fbm	=	1 sheet 4'* 8' panel (3/8" basis)
500 fbm sawn lumber	=	1 cord (85 cubic feet solid wood)

[a] These are the conversion factors commonly used to convert gross volumes of softwood lumber. They are based on the volumetric ratio between one cubic metre (1 m * 1 m * 1 m) and one board foot (1" * 12" * 1").

Sources: Milne and Mallay, 1984
Environment Canada, 1974

APPENDIX C

Table C-1 Estimated earned income after operating expenses

Region	0 to 9 999	10 000 to 19 999	20 000 to 59 999	60 000 to 200 000	Total
	- dollars -				
	# of Respondents				
Eastern	15	14	10	6	45
Central	13	6	3	3	25
Western	3	3	1	1	8
All Regions	31	23	14	10	78
Percentage	40	29	18	13	100

Table C-2 Earned income after operating expenses by sub-groups

Earned Income	Residential Products and Interior Fixtures	Furniture and Fixtures	Other Wooden Products	Total Industry
- dollars -		- number of firms -		
0 - 9 999	18	4	9	31
10 000 - 19 999	16	7	0	23
20 000 - 59 999	9	4	1	14
60 000 - 200 000	6	3	1	10
Total Industry	49	18	11	78

APPENDIX D

Calculation of Value Added

1987 Value Added at Factor Cost (direct method)

Value added at factor cost represents the returns to the factors of production such as land, labor, and capital. Therefore it includes salaries and wages, capital cost allowance (CCA), and net operating surplus, which includes profit.

Value added = Depreciation + Salaries and Wages + Net Operating Surplus

= [(9 392 618 * 0.05) + (7 686 546 * 0.15) + (2 215 909 * 0.20)] + 6 507 900 + 2 127 273

= 2 065 795 + 6 507 900 + 2 127 273

= 10 700 968

where

Depreciation (CCA) = Replacement value of (buildings * 0.05) + (equipment * 0.15) + (vehicles * 0.20)

Salaries and Wages = [(average wage/hour * average length of daily shift) * average days worked per week] * number of paid employees

Net Operating Surplus = Earned income after operating expenses

1981 Value Added at Factor Cost (estimate)

Value Added = (Replacement Value * Depreciation) + Salaries and Wages

= ($ 46 894 977 * 0.07) + $ 9 441 917

= $ 12 724 565